REMARKS

This paper is in response to the Office Action mailed on October 13, 2004 wherein Claims 1-7 and 9-17 were rejected. Claims 1-7 and 9-17 remain pending.

Objection to Drawings

On page 2 of the Office Action, the Examiner objected to the drawings and stated that reference character 10 has been used twice and that sulfur has been spelled incorrectly. Applicants have amended the specification to traverse the first objection. Applicants have corrected Figure 3 with the correct spelling of sulfur.

Claim Rejections Under 35 USC § 103

On page 3 of the Office Action, the Examiner rejected Claims 1-7 and 9-16 under 35 USC §103 as being unpatentable over Ito et al. On page 6 of the Office Action Claim 17 was rejected under Ito et al. in view of Anderson.

The present claimed invention includes elements directed to cleaning sulfur from a three way catalytic inverter by varying air fuel ratio in an internal combustion engine. Ito et al. discloses how to detect sulfur poisoning of a three way catalytic converter. The Examiner has cited steps S83 and S85 in Figure 4, Figure 7, lines 50-56 of column 12, and line 52 of column 10 to line 5 of column 11. Step S83 is a step to determining sulfur poisoning, not a step to remove sulfur from the converter, as disclose in column 9, lines 42-47 (("Figure 4 shows a program for carrying out determination as to sulfur poisoning of a three way catalyst 14"). Similarly Figure 7 is a diagram to explain a third method of determining sulfur poisoning, as disclosed in column 10, lines 52-60. Column 12, lines 50-55 of Ito et al. discloses enriching the air fuel ratio to remove sulfur from the catalyst. Ito et al. does not disclose how fuel enrichment is controlled to clean the CeO2 elements or oxygen storage sites of the converter.

Anderson et al. discloses injecting secondary air and fuel into the exhaust stream of an internal combustion engine to raise the temperature of the catalyst, as disclosed in column 2, lines 28-39. The injection of fuel and air into the exhaust stream creates combustion and heat in the exhaust of the system in Anderson. This is a fundamentally different operation than enriching the air fuel ratio of the engine, as a secondary air valve and fuel injector is required to

inject fuel and air into the exhaust. Anderson further discloses that the engine will operate at stoichiometry, as disclosed in column 2 lines 5-10 and the claims. The present invention specifically calls for the combustion in the engine to vary from lean to stoichiometry to a rich condition in the engine. The present invention also utilizes the fuel injectors in the engine to enrich the air fuel mixture and not an exhaust aftertreatment system to enrich the exhaust gas after it has exited the engine.

Ito et al. and Anderson, singly or in combination, do not teach or suggest the present invention. Furthermore, Anderson explicitly teaches away from enriching the air fuel mixture in an engine, as it includes separate hardware in the exhaust stream. The suggested combination of the Examiner is improper, references cannot be combined where the reference teaches away from their combination. See MPEP Section 2145.

If the Examiner relies on personal knowledge that the operation of the apparatus of the present invention is obvious in light of the cited art, Applicants respectfully request support for this assertion in the form of an affidavit that shall be subject to contradiction or explanation by the affidavits of the Applicant and other persons under 37 C.F.R. 1.104 (d)(2).

Conclusion

The entire Office Action dated October 13, 2004 has been carefully reviewed, and this response is submitted as being fully responsive thereto. In view of the preceding remarks, Applicants respectfully submit that Claims 1-7 and 9-17 are in condition for allowance and respectfully request such action at the Examiner's earliest convenience. If the Examiner believes that personal contact would be advantageous to the disposition of this case, he is requested to call the undersigned at his earliest convenience.

If for some reason a fee needs to be paid, as well as one-month extension fee please charge Deposit Account No. 07-0960 for the fees, which may be due.

Respectfully submitted,

Christopher DeVries - Attorney
Reg. No. 44,654
Telephone: 313-665-4969

Amendments to the Drawings:

The attached drawing sheet includes changes to Figure 3. This sheet should replace the prior sheet which included Figure 3.

Attachment: Replacement Sheet